Is PET-CT guided management for patients with locally advanced head and neck squamous cell cancer (HNSCC) cost-effective?

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PET-Neck late breaking abstract

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Title: Is PET-CT guided management for patients with locally advanced head and neck squamous cell cancer (HNSCC) cost-effective? Results from a UK non-inferiority phase III randomized trial.

Background: Despite ongoing controversy, planned node dissection (ND) remains a common treatment strategy after radical chemoradiotherapy (CRT) for locally advanced nodal metastases in patients with HNSCC. Accurate detection of persistent disease using combined Positron Emission and Computerised Tomography (PET-CT) could reduce unnecessary and expensive node dissections (ND) in low-risk patients and potentially improve overall outcomes.

Methods: 564 patients with N2/N3 oropharyngeal, laryngeal, oral, hypopharyngeal or occult HNSCC were randomized (1:1) to receive either planned ND (before or after CRT), or PET-CT surveillance (CRT followed by PET-CT, with ND administered if incomplete response in the neck nodes). To accurately inform reimbursement decisions, individual patient data from the trial was used to assess within-trial (2-year) cost-effectiveness of PET-CT surveillance versus planned ND from an NHS secondary care perspective. Health benefit was measured using quality-adjusted life-years (QALYs) and costs are reported in 2015 GBP. Probabilistic analysis was conducted using bootstrap methods.

Results: PET-CT surveillance was cost-effective over the trial period, producing an average per-person cost saving of £1,415 (95% CI: -607 to -2,218) and a health gain of 0.07 QALYs (95% CI: -0.04 to 0.19) compared to planned ND. The average cost was £12,127 (95% CI: 11,601 to 12,686) for PET-CT surveillance vs. £13,542 (95% CI: 12,968 to 14,131) for planned ND; the average QALYs were 1.26 (95% CI: 1.18 to 1.34) vs. 1.19 (95% CI: 1.10 to 1.27). At a £20,000 per QALY threshold, the probability that PET-CT was the cheapest, most effective and most cost-effective strategy was 99%, 91%, and 98%, respectively. Expanding the analysis to include additional NHS, personal social services and societal costs increased the expected costs for each arm but did not alter the overall cost-effectiveness of PET-CT surveillance.

Conclusions: Results of the economic evaluation indicate that PET-CT surveillance is cost-effective over a short time horizon.